



CHLORIDE

Background
 Chloride in groundwater generally originates from two main sources:
 a) dissolution of salts in geological deposits, such as marine shales or near-shore siltstones or sandstones; or b) downward leaching of near-surface contaminants into groundwater, such as from landfills, sewage, or road salts.

The Canadian Drinking Water Guidelines recommend chloride concentrations of less than 250 mg/L. While not unhealthy, chloride concentrations greater than 250 mg/L can impart an objectionable taste to water.

Current Situation
 For the Grimshaw Aquifer, over 325 tests for chloride have been carried out. Over 80% of all tests measured less than 20 mg/L. The average chloride concentration is about 5 mg/L. In general, the higher chloride levels coincide with wells completed in either buried valley or bedrock aquifers, or areas of reduced clay cover. The approximate test results and location of wells where samples were tested for chloride are shown on the adjacent figure. This figure includes tests taken both on and off the Grimshaw Gravels Aquifer.

Management Considerations
 Elevated chloride levels may be the first sign of possible contamination. An increase in chloride levels may occur from upward migration of groundwater from underlying aquifers, or from surface sources of contamination. Often elevated nitrate levels together with elevated chloride levels is a more positive indication of groundwater contamination than the presence of nitrate alone. Areas where regular monitoring of chloride levels are recommended are shown on the attached figure.

Source of Data: Alberta Environmental Protection Groundwater Information Centre Chemistry data file (to March, 1996).

		GRIMSHAW GRAVELS AQUIFER	
		WATER QUALITY MAP: CHLORIDE CONCENTRATION	
Scale AS SHOWN	Date JULY, 1996	PFRA No.	FIGURE B10